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Do discourse cues facilitate recall in information presentation messages?

Andi Winterboer, Fernanda Ferreira and Johanna D. Moore

School of Informatics, University of Edinburgh, Edinburgh, United Kingdom

A.Winterboer@, Fernanda.Ferreira@, J.Moore@ed.ac.uk

Abstract

This paper describes an experiment comparing the effect of two different approaches to information presentation on item recall. The results show that using discourse cues facilitates recalling the presented information.

Index Terms: Human language comprehension, information presentation, dialogue systems

1. Introduction

Typically, spoken dialogue systems present information about restaurants, flights, or products using relatively simple templates for natural language realization [1]. Recently, however, a number of approaches to information presentation were introduced using discourse cues (e.g., but, however, moreover, only, just etc.) in order to highlight specific properties of and relations between the presented items [2]. To our knowledge, no empirical validation has been performed to test whether using discourse cues has an effect on item recall.

2. Experiment

In order to test whether there are differences in item recall, we performed an within-participants reading experiment comparing item recall for experiment material presented with/without discourse cues. A total of 24 participants, native English speakers and mostly students of the University of Edinburgh, were paid to participate in the study. First, in a trial the experiment material was presented on the screen showing three item descriptions containing information about consumer products. After reading the text and pressing the enter button the next screen appeared containing a question. Once the question was understood, the participant had to press enter again and a text field was shown to type in the answer. There were three different questions and all of them had to be answered consecutively. Then, the actual experiment started and participants were shown presentation messages from different domains (each consisting of three items) one after another. If the first message contained discourse cues, the second did not and vice versa. Three different orders were used to avoid order effects.

Table 1: *Experiment material without discourse cues*

Messina's price is £22. It has very good food quality, attentive service, and decent décor.
Ray's price is £34. It has very good food quality, excellent service, and impressive décor.
Alhambra's price is £16. It has good food quality, bad service, and plain décor.

Table 1 and Table 2 present example messages without and with discourse cues. We used examples from 14 domains (Rental cars, fridges, book bags, Mp3 players, etc.). There were three kinds of evaluation questions:

Table 2: *Experiment material with discourse cues*

Messina's price is £22. It has very good food quality, attentive service, and decent décor.
Ray's price is £34. It has **also** very good food quality, **but** excellent service, and **moreover** impressive décor.
Alhambra's price is **only** £16. It has good food quality, **but** bad service, and **only** plain décor.

- Verbatim Q. (e.g., Which restaurant's price is £34?),
- Comparison Q. (e.g., Which restaurant is the cheapest?), and
- Evaluation Q. (e.g., Which restaurant would you like to go to and why?).

3. Results

Overall, we found a consistent trend indicating that items in messages containing discourse cues could be recalled more easily (see Table 3). In particular, answers to comparison questions were correctly recalled significantly more often when discourse cues were present ($p < .05$, indicated with "*" below, on a scale from 0-7).

Table 3: *Number of correctly recalled items for 3 questions*

	Verb. Q.	Comp. Q.	Eval. Q.
w/o disc. cues	5.54	4.79*	5.13
with disc. cues	5.71	5.50*	5.67

4. Conclusions

We found that using discourse cues indeed facilitates the recall of information presented on a screen in a reading experiment. Research on the differences between listening and reading comprehension seems to suggest that these findings can also be applied to spoken stimuli [3]. Since we used an eye-tracking setup, there is more data to be analyzed potentially revealing comprehension differences between the two presentation approaches.

5. References

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